



Cat.no.:E-PS



Cat.no.:E-GGC



Cat.no.:E-TMBV



Cat.no.:E-FBV



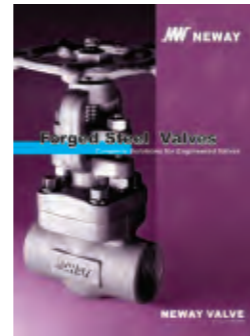
Cat.no.:E-DOV



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Cat.no.:E-PLV



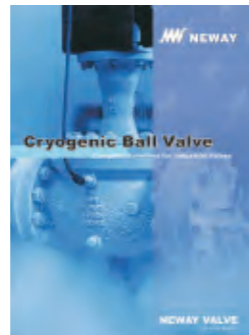
Cat.no.:E-FSV



Cat.no.:E-DAV



Cat.no.:E-CPS



Cat.no.:E-CBV



Cat.no.:E-PV

MW NEWAY
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Triple Offset Butterfly Valves

Complete Solutions for Industrial Valves



MW NEWAY

NEWAY VALVE

Cat.no.:E-TOV-2019

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Complete Solutions for Industrial Valves

As a global leader of valve manufacturing, Neway (SSE:603699) is dedicated to the production, research, and development of industrial valves. Neway is committed to providing complete valve solutions to all industries through advanced engineering and innovation.

Neway's product line includes Ball, Butterfly, Gate, Globe, Check, Nuclear, Control, Subsea, Safety valves. Our high quality standards and innovative ability are recognized by many global end users and EPCs. Neway valves are utilized in a wide variety of industries and working conditions such as Refining, Chemical, Coal Chemical, Offshore(including subsea), Air Separation, LNG, Nuclear Power, Power Generation, and Pipeline Transmission applications.

Facilities & Service

Neway has developed a sophisticated multi-plant management system operating one valve assembly plant, one API6A valve plant, three foundries, and one R&D center. Our largest assembly plant was expanded in 2013, and it now covers 35,000 square meters.

Advanced software (ANSYS, FE-Safe, CF-Design, Siemens PLM and NX) is applied here at Neway for the Research & Development of products. We use SAP to control the traceability and status of all products during the manufacturing process. In order to ensure the safety, eco-friendliness, and reliability of our products, we use the most advanced fire-safe, cryogenic, high pressure, and fugitive emission test equipment.

As part of Neway's global strategy, to provide better service to our customers, we have established our overseas subsidiaries in USA, Netherlands, Italy, Singapore, and Dubai along with over 80 agents and distributors worldwide.

Quality Assurance

Neway is dedicated to the pursuit of "Zero Defect". We maintain a quality management system that encompasses our entire operation from order entry, to final inspection. Through Neway's continuous efforts, our products have successfully achieved industrial certificates including ISO 9001, API 6A, API 6D, CE/PED, ASME N & NPT, TA-Luft, ABS, CU-TR, and Fire-Safe approvals.

NORSOK



ISO 9001



API 6A



CE/PED

TA Luft



ABS

AD2000



Fire Safe Test

Neway recognizes the importance of valve quality for the safety and protection of personnel health and property. It is our quality commitment to focus our resources to provide our customers with first class products at a competitive price, designed, manufactured, inspected and tested in accordance with our customers specifications, while complying with all international standards.

Current industrial standards do not always take into consideration the likelihood and consequences of possible deterioration, related to specific service fluids or the external environments in which they operate; Therefore, we request that our customers communicate with our engineering department. Our valve optimization program continuously strives to provide valves that withstand deterioration in service, and ensure safety over the valves expected lifetime.

Figure Numbers

12	TC	1	W	–	G	,	C00	/	5998
①	②	③	④		⑤		⑥		⑦

Neway figure numbers are designed to cover essential features. When ordering, please show figure number to avoid misunderstanding of your requirements. However a detailed description must accompany with any special orders.

① Valve Size

3 = 3" (DN80)	24 = 24" (DN600)
4 = 4" (DN100)	28 = 28" (DN700)
6 = 6" (DN150)	30 = 30" (DN750)
8 = 8" (DN200)	36 = 36" (DN900)
10 = 10" (DN250)	42 = 42" (DN1050)
12 = 12" (DN300)	48 = 48" (DN1200)
14 = 14" (DN350)	52 = 52" (DN1300)
16 = 16" (DN400)	56 = 56" (DN1400)
18 = 18" (DN450)	60 = 60" (DN1500)
20 = 20" (DN500)	64 = 64" (DN1600)

② Triple Offset Butterfly Valve

Symbol	Type
TC	Triple Offset Butterfly Valve

④ End Connection

Symbol	Type
R	Raised Face Flanged End
B	Butt-Welding End
W	Wafer
L	Lug

⑦ Trim Code

First digit		Second digit		Third digit		Fourth digit	
Stem		Seat		Metal Seal Ring		Non-metal seal ring	
Code	Material	Code	Material	Code	Material	Code	Material
4	MONEL K500	9	STL.21	9	F51	8	GRAPHITE
5	17-4PH			Q	XM-19		
9	F51			S	INCONEL 718		
A	XM-19			T	17-4PH		
N	INCONEL 718						
P	616HT						
L	431						

Notes: other materials upon request.

③ ANSI Class

Code	1	3	6
Class	150	300	600

⑤ Operation

G	Gearbox
M	Electric actuator
P	Pneumatic actuator
BS	Bare Stem

⑥ Body Material

Material	ASTM Ref.
C00	A216 Grade WCB
L20	A352 Grade LCB
L21	A352 Grade LCC
S00	A351 Grade CF8
S01	A351 Grade CF8M
S02	A351 Grade CF3
S03	A351 Grade CF3M

Design Features

Industrial valves require higher temperature and pressure ranges that are beyond the capacity of conventional butterfly valves. For this reason, Neway has developed the metal-seated Triple Offset butterfly valve as a solution for the toughest industrial applications. Neway's TC Series butterfly valve offers a light-weight, cost-effective, and compact design with a low operating torque. Additionally, it can replace traditional Gate, Globe, and Ball valves in most industry applications.



Product Range:

Design Standard:	API 609, ASME B16.34
Flange:	ASME B16.5, ASME B16.47
Face-to-face dimension:	API 609, ISO 5752
Size:	3" ~ 120", DN80~DN3000
Pressure rating:	CLASS 150~CLASS 2500, PN16~420
Temperature Range:	-196°C~650°C
Disc sealing surface:	Graphite/Metal laminated, Solid metal
End Connection:	Wafer, Lug, Double flange, Butt-welding

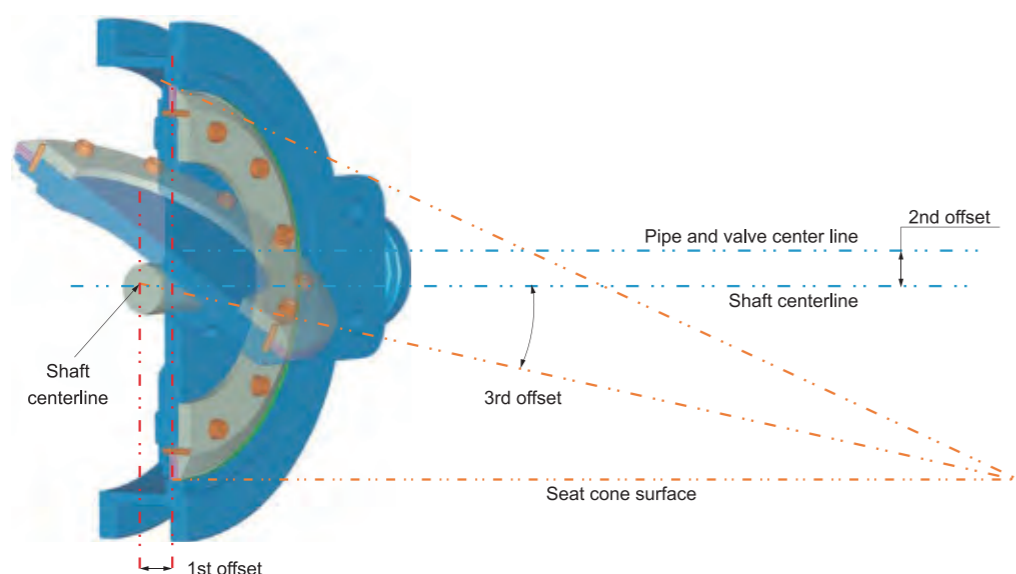
Typical Applications:

- Petrochemical
- Refinery
- Shipbuilding Industry
- Power Plant
- Steel Mill
- Water Treatment

The Neway TC Series butterfly valve has a true metal-seated, quarter-turn design for Bi-directional service. It is fire safe by design, and it eliminates the innate problem of material aging and deformation in soft seated butterfly valves. Full metal construction and increased material compatibility make TC butterfly valves ideal for most process and control applications.

Triple Offset Frictionless Design

- Offset 1: The shaft is offset from seat plane, allowing a continuous seating surface.
- Offset 2: The shaft centerline is offset from disc centerline to lift the disc rapidly off and away from the seat when the valve is open.
- Offset 3: The cone axis is offset from seal centerline, eradicating disc-seat friction.



Low operating torque

Neway TC Series butterfly valves combine three offsets with flexible laminated metal and graphite to assure a tight and uniform seal and reduce operating torque.

Zero Leakage

Laminated seal rings are designed to self align and allow valves to meet zero leakage per API 598.

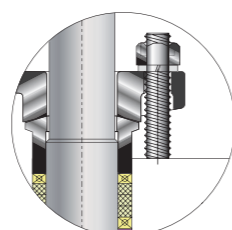
Fire Safe Design

Standard TC Series butterfly valves are not soft seated and can fulfill the fire-safe requirements of API 607.

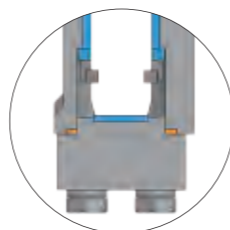
Anti-blowout Shaft

Double anti-blowout design satisfies API 609 and ASME B31.1 requirements through both internal and external stem retention.

- Top Retention: Packing gland follower retains the stem integral collar.
- Bottom Retention: T shaped attachment prevents stem blow-out.



Top retention



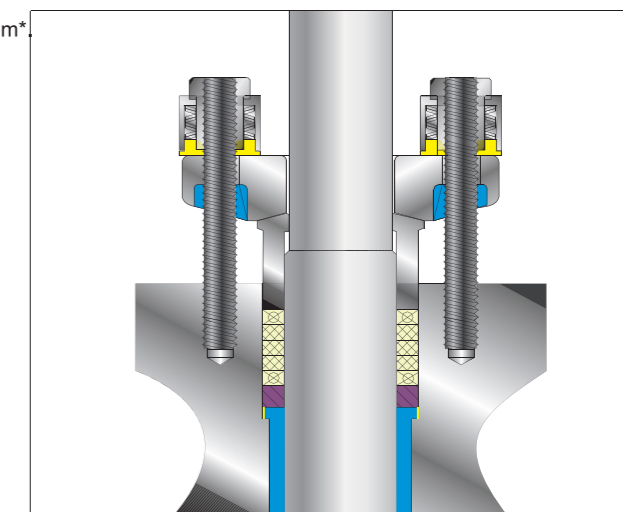
Bottom retention

Low Emission Shaft Seal

Neway can supply low-emission stem seal with leakage rate up to 20 ppm*.

- Shaft is fully guided by shaft bearing & gland follower to reduce side load due to line pressure thrust.
- The packing set is pre-compressed and is a combination of braided graphite rings and die formed flexible graphite rings.
- Controlled Ra0.4~Ra0.8 finish on the shaft and Ra1.6 on the stuffing box provides optimum packing and shaft sealing.
- Optional Live Loaded gland flange available to provide constant packing compression to reduce fugitive emissions.
- Optional shaft seal design available per Shell MESC 77/312 & TA-Luft.

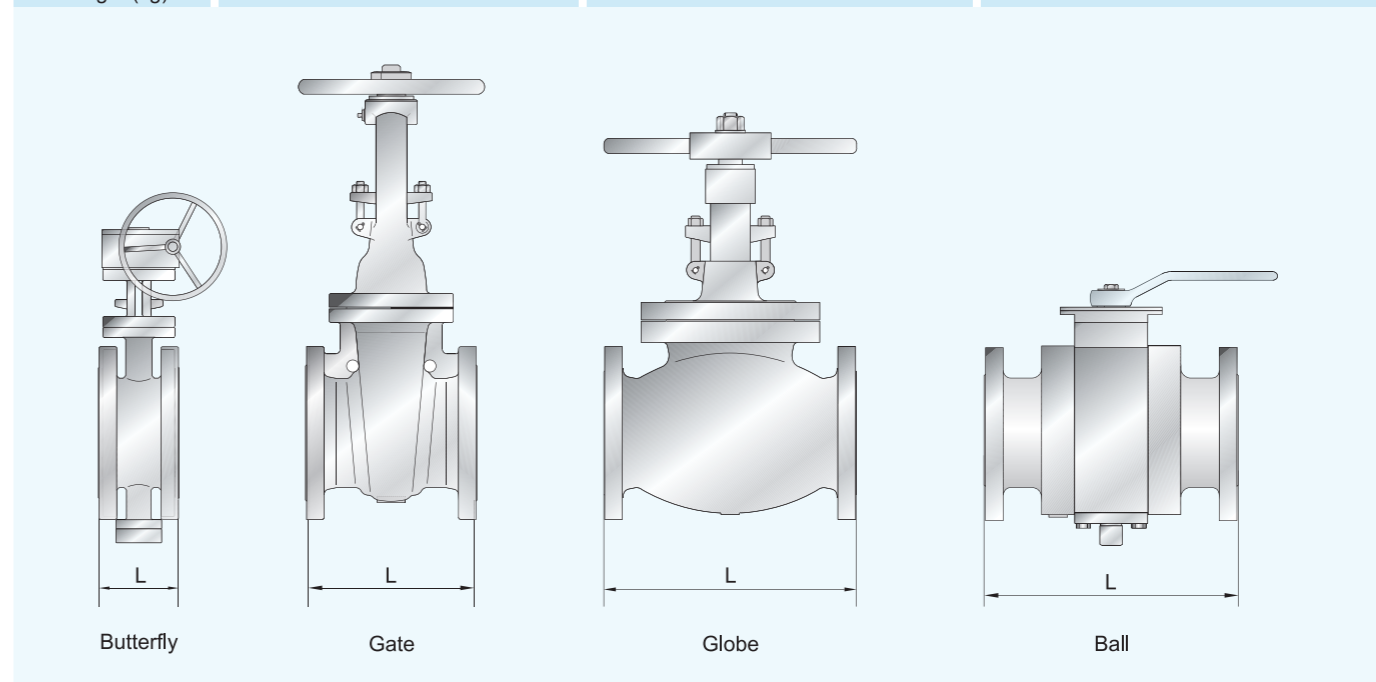
* 20ppm per sniffing method with helium gas.



Compact Design

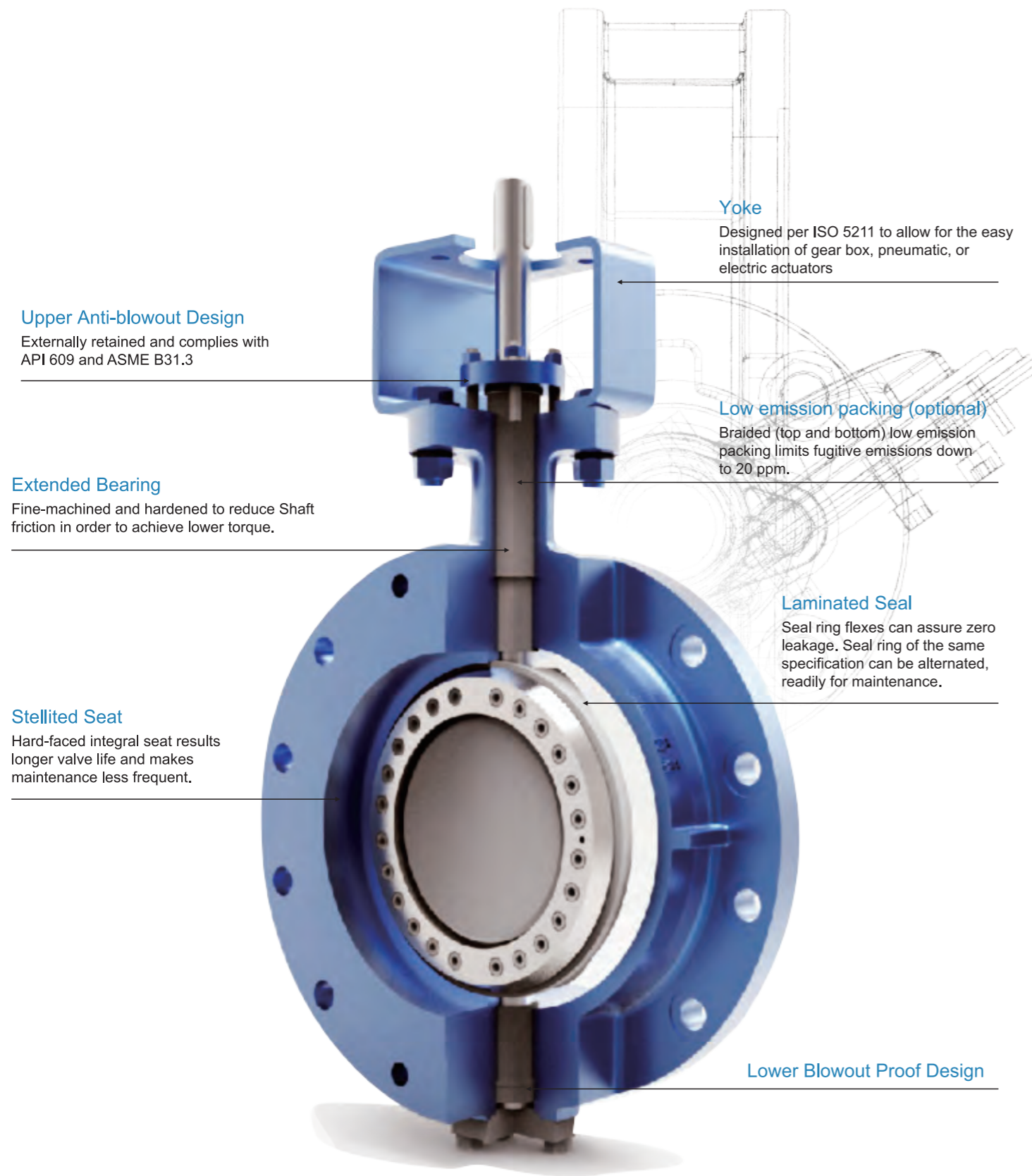
Neway triple offset butterfly valves are designed to API 609 and offers flow control solution in a compact design. The TC series provides a light weight solution to bulky gate, globe, and ball valves when space or weight are at a premium.

6" Valve	CLASS 150				CLASS 300				CLASS 600			
	Butterfly	Gate	Globe	Ball	Butterfly	Gate	Globe	Ball	Butterfly	Gate	Globe	Ball
Face to Face (mm)	140	267	406	394	140	403	445	403	210	559	559	559
Weight (kg)	49	77	100	190	70	144	168	211	140	234	284	248



Triple Offset Butterfly Valve

Design Features

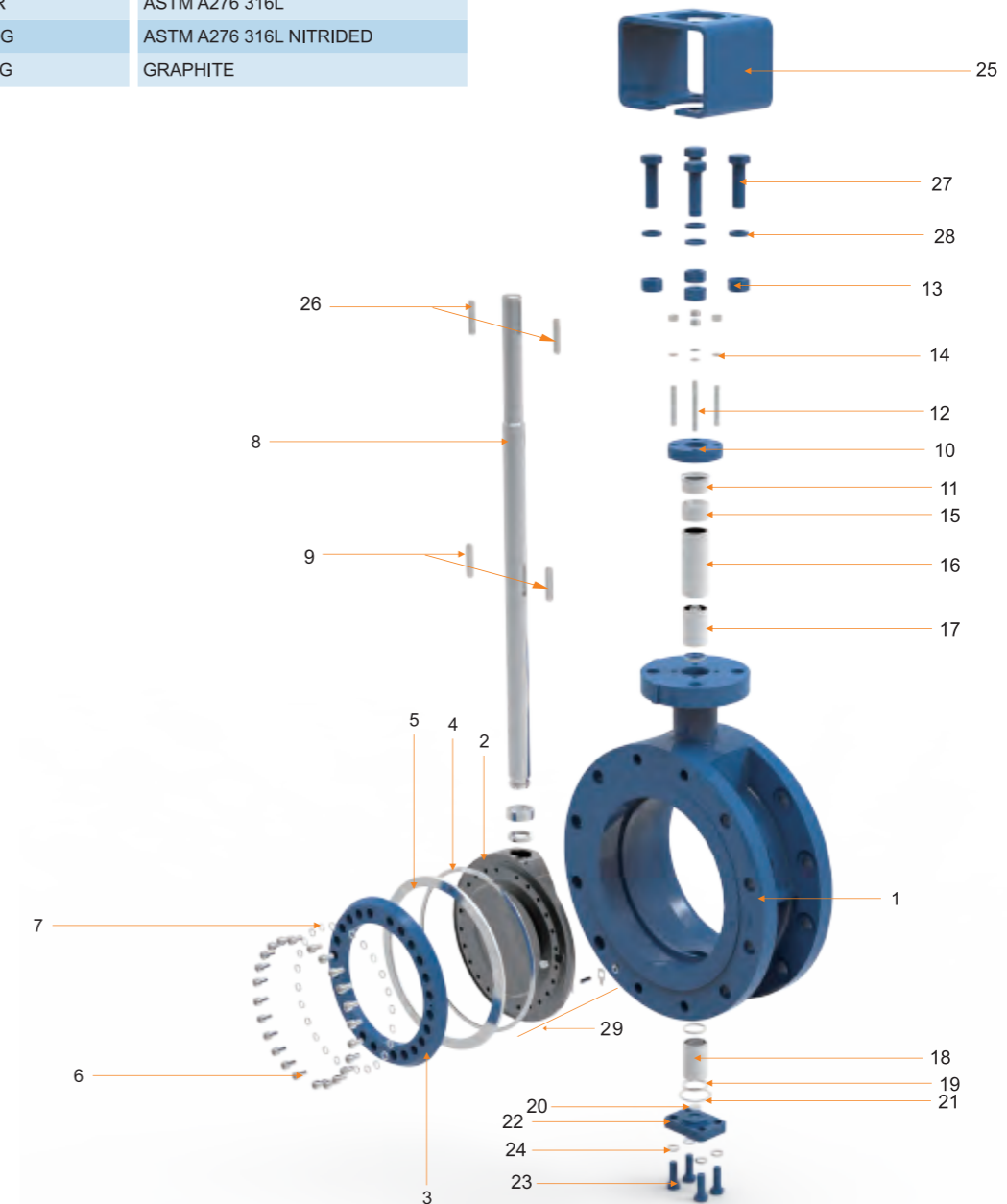


Triple Offset Butterfly Valve

Material Specifications

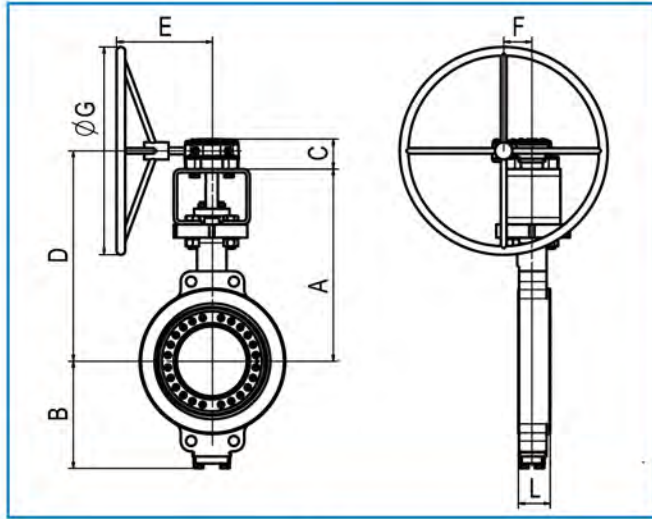
No.	Part	Standard Material
1	BODY	ASTM A216 WCB/STL.21 OVERLAY
2	DISC	ASTM A216 WCB
3	RING RETAINER	ASTM A105N NICKEL PLATED
4	GASKET	SPIRAL WOUND/ GRAPHITE
5	SEAL RING	UNS31803+GRAPHITE
6	SCREW	ASTM A193 B8
7	WASHER	AISI 304
8	STEM	ASTM A479 431
9	KEY	ASTM A479 431
10	GLAND FLANGE	ASTM A105N
11	PACKING FOLLOWER	ASTM A276 420
12	BOLT	ASTM A193 B7M
13	NUT	ASTM A194 2HM
14	WASHER	AISI 1566
15	PACKING	GRAPHITE
16	SPACER	ASTM A276 316L
17	BEARING	ASTM A276 316L NITRIDED
18	PACKING	GRAPHITE

No.	Part	Standard Material
19	BLOWOUT PROOF BLOCK	ASTM A276 316L NITRIDED
20	THRUST BEARING	ASTM A276 316L NITRIDED
21	GASKET	GRAPHITE
22	BOTTOM FLANGE	ASTM A105N
23	STUD	ASTM A193 B7M
24	WASHER	AISI 1566
25	BRACKET	AISI 1020
26	KEY	17-4PM
27	STUD	ASTM A193 B7M
28	WASHER	AISI 1566
29	RETAINER DEVICE	AISI 316

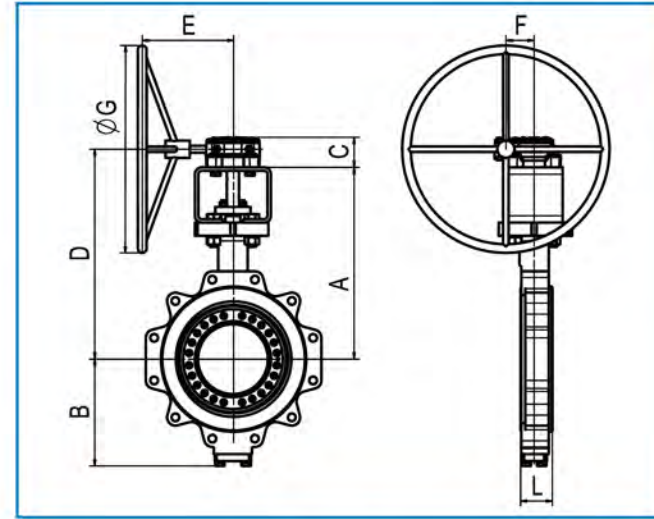


Triple Offset Butterfly Valve

Dimensions & Weights



Wafer



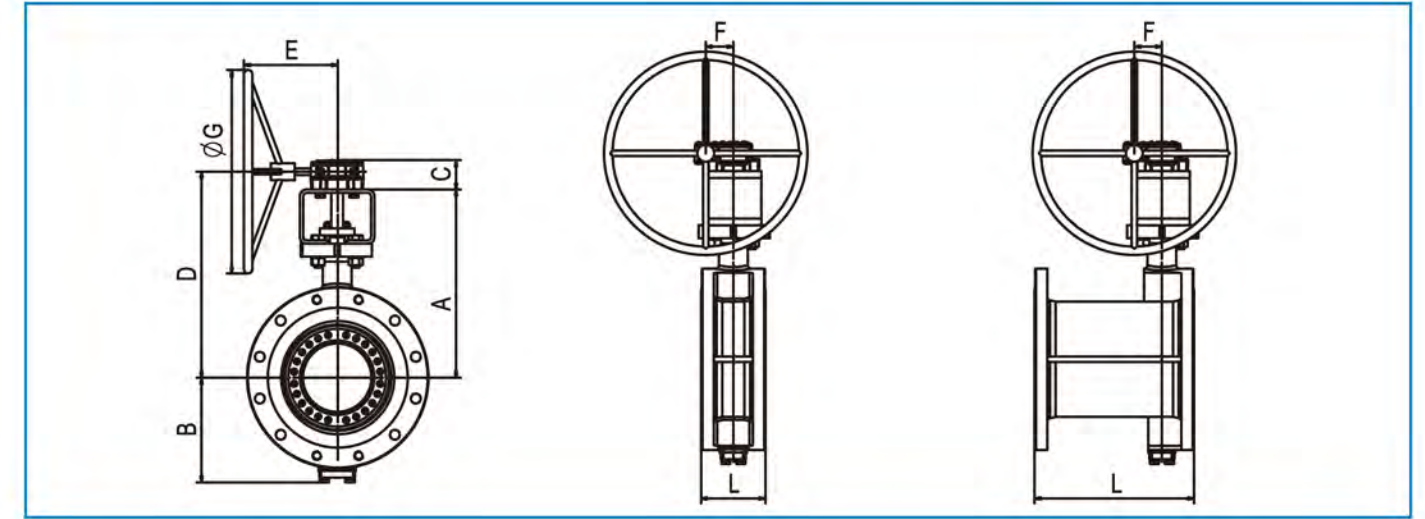
Lug

Class 150 (inch)

Size	L				Valve Dimensions				Gear Dimensions			Approx. Weight (lb)				Gear Model
	Wafer	Lug	RF-S	RF-L	A	B	C	D	E	F	G	Wafer	Lug	RF-S	RF-L	
3"	1.88	1.88	4.50	8.00	9.06	5.29	1.58	9.82	3.62	1.35	3.94	30.90	35.30	50.70	55.10	A1.5
4"	2.12	2.12	5.00	9.00	10.24	6.00	1.97	11.32	6.30	1.63	7.87	39.70	48.50	75.00	79.40	A3
6"	2.25	2.25	5.50	10.50	12.20	7.24	2.37	13.52	8.35	2.17	11.81	66.10	77.20	116.80	132.30	A7
8"	2.50	2.50	6.00	11.50	14.76	8.49	2.37	16.08	8.35	2.17	11.81	105.80	116.80	185.20	205.00	A7
10"	2.81	2.81	6.50	13.00	16.73	9.67	2.80	18.21	10.04	2.71	15.75	136.70	156.50	242.50	291.00	A10
12"	3.19	3.19	7.00	14.00	18.31	10.85	2.95	19.96	10.04	3.19	15.75	187.40	220.50	332.90	401.20	A20
14"	3.62	3.62	7.50	15.00	21.85	12.17	3.39	23.94	10.83	3.19	23.62	275.60	330.70	467.40	518.10	A20
16"	4.00	4.00	8.50	16.00	22.64	14.45	4.00	24.53	13.62	4.11	23.62	396.80	463.00	617.30	683.40	A30
18"	4.50	4.50	8.75	17.00	24.02	15.24	4.00	25.91	13.62	4.11	23.62	573.20	608.50	749.60	848.80	A30
20"	5.00	5.00	9.00	9.00	25.59	16.61	4.89	27.76	15.67	5.12	23.62	683.40	793.70	992.10	1113.30	A70
24"	6.06	6.06	10.50	18.00	27.56	19.61	4.89	29.72	15.67	5.12	23.62	992.10	1223.60	1422.00	1576.30	A70
28"	6.50	6.50	11.50	20.00	29.92	21.97	6.26	32.24	17.74	7.17	23.62					A180
30"	7.48	7.48	12.52		32.28	23.70	7.01	35.63	18.54	8.23	31.50					A240
32"	7.48	7.48	12.52		34.84	24.65	7.01	38.19	18.54	8.23	31.50					A240
36"	7.99	7.99	12.99		37.80	26.38	7.56	48.72	25.59	9.70	31.50					A460
40"	8.50	8.50	16.14		40.04	27.80	7.56	50.96	25.59	9.70	31.50					A460
42"	9.02	9.02	16.14		41.73	30.35	8.54	49.65	27.76	10.98	31.50					A630
48"	10.00	10.00	18.50		48.03	35.47	8.54	55.94	27.76	10.98	31.50					A630

Triple Offset Butterfly Valve

Dimensions & Weights



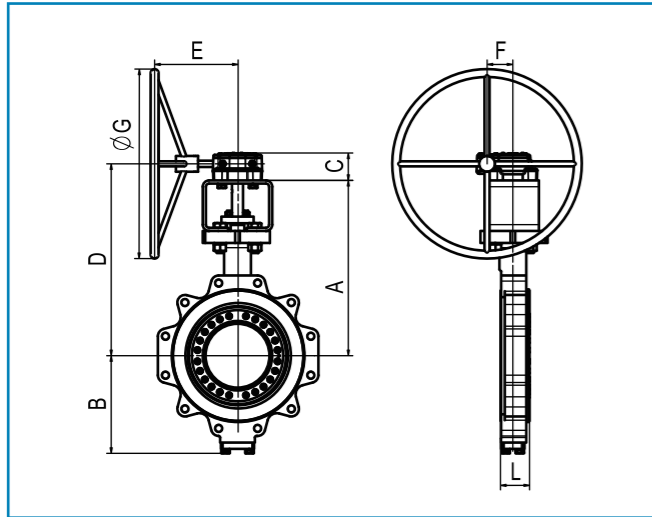
Flange

Class 150 (mm)

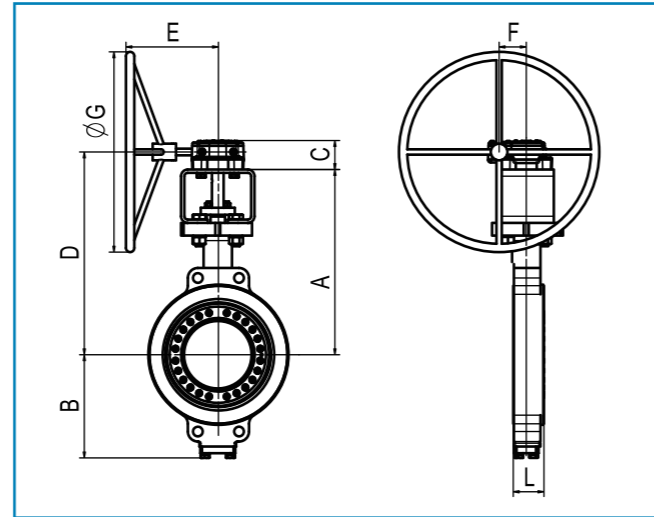
Size	L				Valve Dimensions				Gear Dimensions			Approx. Weight (kg)				Gear Model
	Wafer	Lug	RF-S	RF-L	A	B	C	D	E	F	G	Wafer	Lug	RF-S	RF-L	
3"	48	48	114	203	230	134	40.25	250	92	34.4	100	14	16	23	25	A1.5
4"	54	54	127	229	260	152	50	288	160	41.3	200	18	22	34	36	A3
6"	57	57	140	267	310	184	60.2	344	212	55	300	30	35	53	60	A7
8"	64	64	152	292	375	216	60.2	409	212	55	300	48	53	84	93	A7
10"	71	71	165	330	425	246	71.2	463	255	68.8	400	62	71	110	132	A10
12"	81	81	178	356	465	276	75	507	255	81	400	85	100	151	182	A20
14"	92	92	190	381	555	309	86	608	275	81	600	125	150	212	235	A20
16"	102	102	216	406	575	367	101.5	623	346	104.5	600	180	210	280	310	A30
18"	114	114	222	432	610	387	101.5	658	346	104.5	600	260	276	340	385	A30
20"	127	127	229	457	650	422	124.2	705	398	130	600	310	360	450	505	A70
24"	154	154	267	508	700	498	124.2	755	398	130	600	450	555	645	715	A70
28"	165	165	292		760	558	159	819	450.5	182	600					A180
30"	190	190	318		820	602	178	905	471	209	800					A240
32"	190	190	318		885	626	178	970	471	209	800					A240
36"	203	203	330		960	670	192	1238	650	246.4	800					A460
40"	216	216	410		1017	706	192	1295	650	246.4	800					A460
42"	229	229	410		1060	771	217	1261	705	279	800					A630
48"	254	254	470		1220	901	217	1421	705	279	800					A630

Triple Offset Butterfly Valve

Dimensions & Weights



Lug



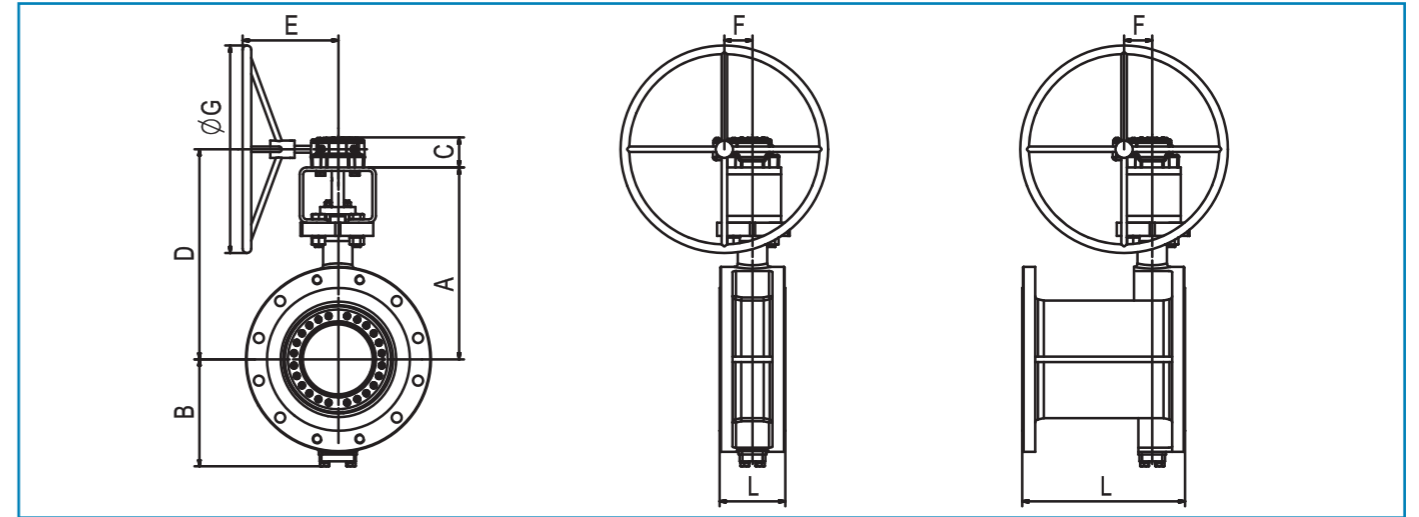
Wafer

Class 300 (inch)

Size	L				Valve Dimensions				Gear Dimensions			Approx. Weight (lb)				Gear Model
	Wafer	Lug	RF-S	RF-L	A	B	C	D	E	F	G	Wafer	Lug	RF-S	RF-L	
3"	1.88	1.88	4.50	11.12	9.06	5.29	1.97	10.14	5.47	1.63	7.87	33.10	37.50	61.70	72.80	A3
4"	2.12	2.12	5.00	12.00	10.24	6.00	1.97	11.32	6.30	1.63	7.87	41.90	48.50	90.40	108.00	A3
6"	2.31	2.31	5.50	15.88	12.99	7.66	2.37	14.31	8.35	2.17	11.81	92.60	105.80	165.30	224.90	A7
8"	2.88	2.88	6.00	16.50	16.14	8.88	2.95	17.80	10.04	3.19	15.75	136.70	158.70	242.50	319.70	A20
10"	3.25	3.25	6.50	18.00	19.29	10.87	4.00	21.18	13.62	4.11	19.69	211.60	257.90	363.80	474.00	A30
12"	3.62	3.62	7.00	19.75	20.47	12.48	4.00	22.36	13.62	4.11	23.62	297.60	363.80	518.10	694.50	A30
14"	4.62	4.62	7.50	30.00	22.83	14.25	4.82	25.00	15.67	5.12	19.69	485.00	650.40	760.60	1025.10	A70
16"	5.25	5.25	8.50	33.00	23.82	15.87	4.82	25.98	15.67	5.12	19.69	639.30	837.80	959.00	1291.90	A70
18"	5.88	5.88	8.75	36.00	25.20	16.85	6.10	27.70	16.91	5.51	23.62	782.60	1047.20	1157.40	1631.40	A900
20"	6.25	6.25	9.00	39.00	26.77	18.35	6.10	29.27	16.14	5.51	19.69	1135.40	1444.00	1620.40	2171.60	A120
24"	7.12	7.12	10.50	45.00	31.69	20.91	7.09	34.84	17.74	7.17	23.62	1433.00	1995.20	2257.50	3141.60	A180
30"	9.02	9.02	12.52		37.80	26.14	7.56	48.72	25.59	9.72	31.50					A460
32"	9.49	9.49	12.52		37.80	26.73	7.56	48.72	25.59	9.72	31.50					A460
36"	9.49	9.49	12.99		43.70	30.16	8.50	52.68	28.82	13.50	23.62					A900
40"	11.81	11.81	16.14		45.87	31.54	8.50	54.84	28.82	13.50	23.62					A900

Triple Offset Butterfly Valve

Dimensions & Weights



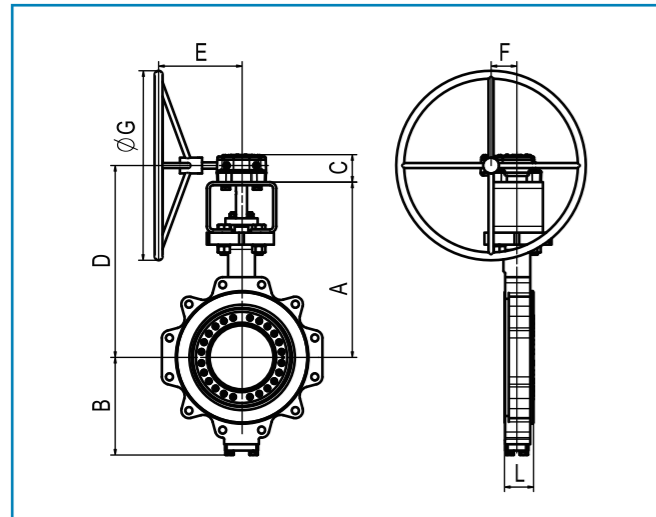
Flange

Class 300 (mm)

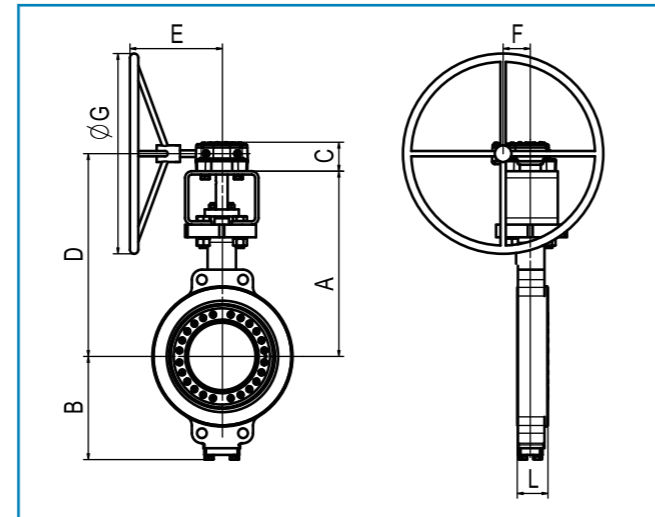
Size	L				Valve Dimensions				Gear Dimensions			Approx. Weight (kg)				Gear Model
	Wafer	Lug	RF-S	RF-L	A	B	C	D	E	F	G	Wafer	Lug	RF-S	RF-L	
3"	48	48	114	282	230	134	50	258	139	41.3	200	15	17	28	33	A3
4"	54	54	127	305	260	152	50	288	160	41.3	200	19	22	41	49	A3
6"	59	59	140	403	330	195	60.2	364	212	55	300	42	48	75	102	A7
8"	73	73	152	418	410	226	75	452	255	81	400	62	72	110	145	A20
10"	83	83	165	457	490	276	101.5	538	346	104.5	500	96	117	165	215	A30
12"	92	92	178	502	520	317	101.5	568	346	104.5	600	135	165	235	315	A30
14"	117	117	190	762	580	362	122.4	635	398	130	500	220	295	345	465	A70
16"	133	133	216	838	605	403	122.4	660	398	130	500	290	380	435	586	A70
18"	149	149	222	914	640	428	155	704	429.5	140	600	355	475	525	740	A900
20"	159	159	229	991	680	466	155	744	410	140	500	515	655	735	985	A120
24"	181	181	267	1143	805	531	180	885	450.5	182	600	650	905	1024	1425	A180
30"	229	229	318		960	664	192	1238	650	247	800					A460
32"	241	241	318		960	679	192	1238	650	247	800					A460
36"	241	241	330		1110	766	216	1338	732	343	600					A900
40"	300	300	410		1165	801	216	1393	732	343	600					A900

Triple Offset Butterfly Valve

Dimensions & Weights



Lug



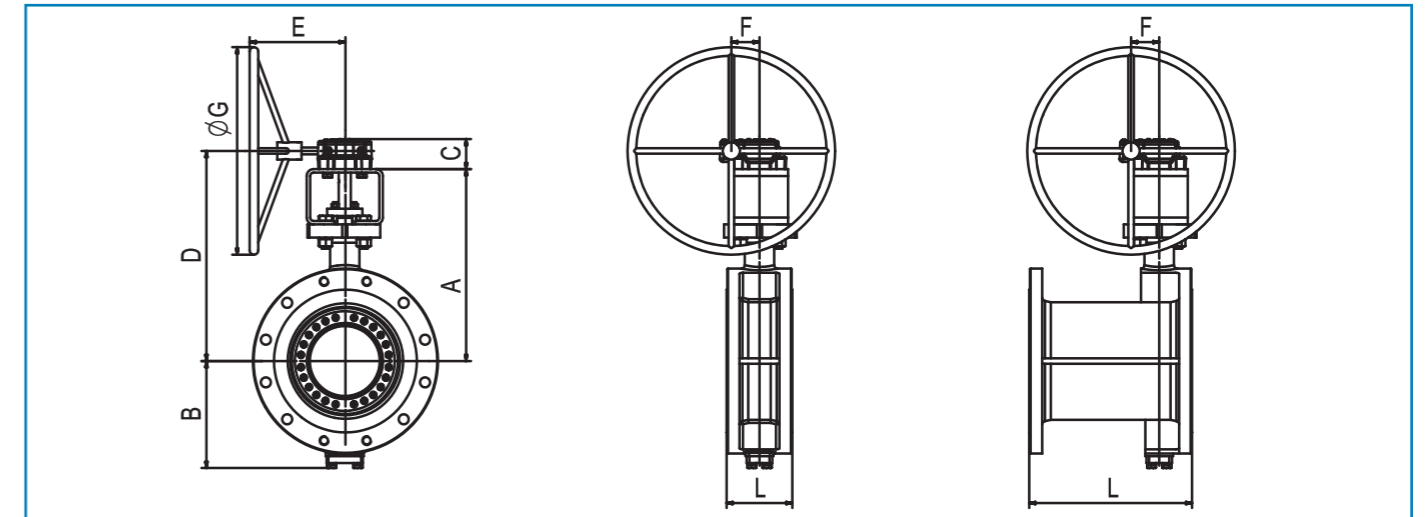
Wafer

Class 600 (inch)

Size	L				Valve Dimensions				Gear Dimensions			Approx. Weight (lb)				Gear Model
	Wafer	Lug	RF-S	RF-L	A	B	C	D	E	F	G	Wafer	Lug	RF-S	RF-L	
3"	2.12	2.12	7.09	14.00	10.63	5.86	2.36	11.95	8.35	2.17	11.81	70.50	83.80	110.20	143.30	A7
4"	2.50	2.50	7.48	17.00	11.81	6.32	2.83	13.29	10.04	2.72	15.75	83.80	105.80	172.00	198.40	A10
6"	3.06	3.06	8.27	22.00	16.93	9.02	2.95	18.58	10.83	3.19	19.69	172.00	205.00	308.60	374.80	A20
8"	4.00	4.00	9.06	26.00	18.70	10.57	4.02	20.59	13.62	4.13	23.62	280.00	341.70	507.10	679.00	A30
10"	4.62	4.62	9.84	31.00	20.47	12.09	4.84	22.64	15.67	5.12	19.69	463.00	584.20	824.50	1091.30	A70
12"	5.50	5.50	10.63	33.00	21.97	14.41	6.02	24.39	16.14	5.51	19.69	617.30	771.60	978.90	1322.80	A90
14"	6.12	6.12	11.42	35.00	23.62	15.39	6.02	26.04	16.14	5.51	19.69	705.50	925.90	1263.20	1829.80	A120
16"	7.00	7.00	12.20	39.00	25.20	17.17	6.26	27.52	17.76	7.17	23.62	945.80	1234.60	1532.20	2204.60	A180
18"	7.88	7.88	12.99	43.00	30.12	18.98	7.01	33.46	18.54	8.23	23.62	1366.90	2028.30	2570.60	3351.00	A240
20"	8.50	8.50	13.78	47.00	32.09	20.28	7.56	43.01	25.59	9.72	31.50	1763.70	2645.50	3066.60	4243.90	A460
24"	9.13	9.13	15.35	55.00	33.46	22.20	7.56	44.39	25.59	9.72	31.50	2010.60	2634.50	4354.10	5899.60	A460

Triple Offset Butterfly Valve

Dimensions & Weights

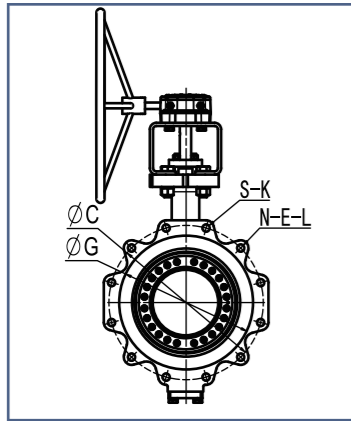


Flange

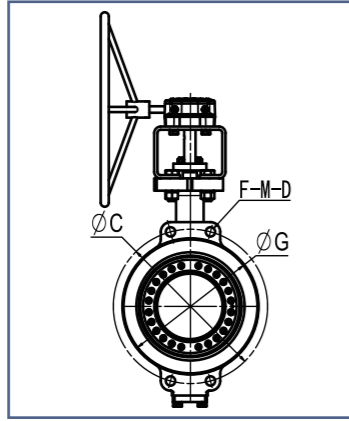
Class 600 (mm)

Size	L				Valve Dimensions				Gear Dimensions			Approx. Weight (kg)				Gear Model
	Wafer	Lug	RF-S	RF-L	A	B	C	D	E	F	G	Wafer	Lug	RF-S	RF-L	
3"	54	54	180	356	270	149	60	304	212	55	300	32	38	50	65	A7
4"	64	64	190	432	300	161	72	338	255	69	400	38	48	78	90	A10
6"	78	78	210	559	430	229	75	472	275	81	500	78	93	140	170	A20
8"	102	102	230	660	475	269	102	523	346	105	600	127	155	230	308	A30
10"	117	117	250	787	520	307	123	575	398	130	500	210	265	374	495	A70
12"	140	140	270	838	558	366	153	620	410	140	500	280	350	444	600	A90
14"	155	155	290	889	600	391	153	662	410	140	500	320	420	573	830	A120
16"	178	178	310	991	640	436	159	699	451	182	600	429	560	695	1000	A180
18"	200	200	330	1092	765	482	178	850	471	209	600	620	920	1166	1520	A240
20"	216	216	350	1194	815	515	192	1093	650	247	800	800	1200	1391	1925	A460
24"	232	232	390	1397	850	564	192	1128	650	247	800	912	1195	1975	2676	A460

End Connection Dimensions



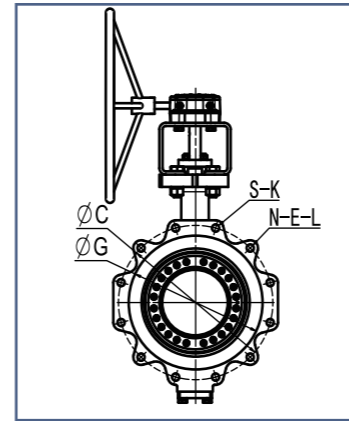
Lug



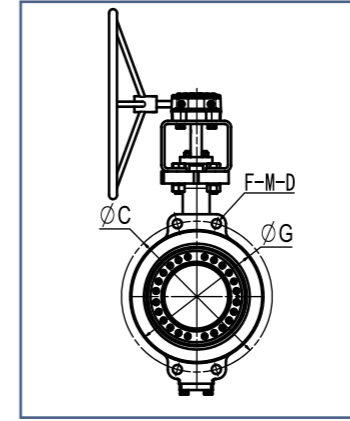
Wafer

Wafer	Lug	
G	G	Raised Face Facing Diameter
C	C	Bolting Circle Diameter
N	N	Total Flange Bolt Holes Quantity
F	S	Special Bolt Holes Quantity
M	E	Standard Bolt Hole/Thread Callout
D	L	Effective Thread/Hole Depth
	K	Shortened Thread Depth

End Connection Dimensions



Lug



Wafer

Wafer	Lug	
G	G	Raised Face Facing Diameter
C	C	Bolting Circle Diameter
N	N	Total Flange Bolt Holes Quantity
F	S	Special Bolt Holes Quantity
M	E	Standard Bolt Hole/Thread Callout
D	L	Effective Thread/Hole Depth
	K	Shortened Thread Depth

Class 150 (Lug and Wafer)

Size		G		C		F	M	D		N	E	L		S	K	
inch	mm	inch	mm	inch	mm			inch	mm			inch	mm		inch	mm
3"	80	5.00	127	6.00	152.5		NONE	NONE		4	5/8-11UNC-2B	full thread		NONE	NONE	NONE
4"	100	6.18	157	7.50	190.5	4	Φ19	through hole		8	5/8-11UNC-2B	full thread		NONE	NONE	NONE
6"	150	8.50	216	9.51	241.5	4	Φ21	through hole		8	3/4-10UNC-2B	full thread		NONE	NONE	NONE
8"	200	10.63	270	11.75	298.5	4	Φ22	through hole		8	3/4-10UNC-2B	full thread		NONE	NONE	NONE
10"	250	12.76	324	14.25	362	4	Φ25	through hole		12	7/8-9UNC-2B	full thread		NONE	NONE	NONE
12"	300	15.00	381	17.01	432	4	Φ25	through hole		12	7/8-9UNC-2B	1.30	33	NONE	NONE	NONE
14"	350	16.26	413	18.74	476	4	Φ29	through hole		12	1-8UNC-2B	1.30	33	NONE	NONE	NONE
16"	400	18.50	470	21.24	539.5	4	1-8UNC-2B	0.67	17	16	1-8UNC-2B	1.50	38	4	0.67	17
18"	450	20.98	533	22.76	578	4	1-1/8-8UN-2B	0.79	20	12	1-1/8-8UN-2B	1.50	38	4	0.79	20
20"	500	22.99	584	25.00	635	4	1-1/8-8UN-2B	0.79	20	16	1-1/8-8UN-2B	1.69	43	4	0.79	20
24"	600	27.24	692	29.51	749.5	4	1-1/8-8UN-2B	0.87	22	16	1-1/8-8UN-2B	1.89	48	4	0.87	22

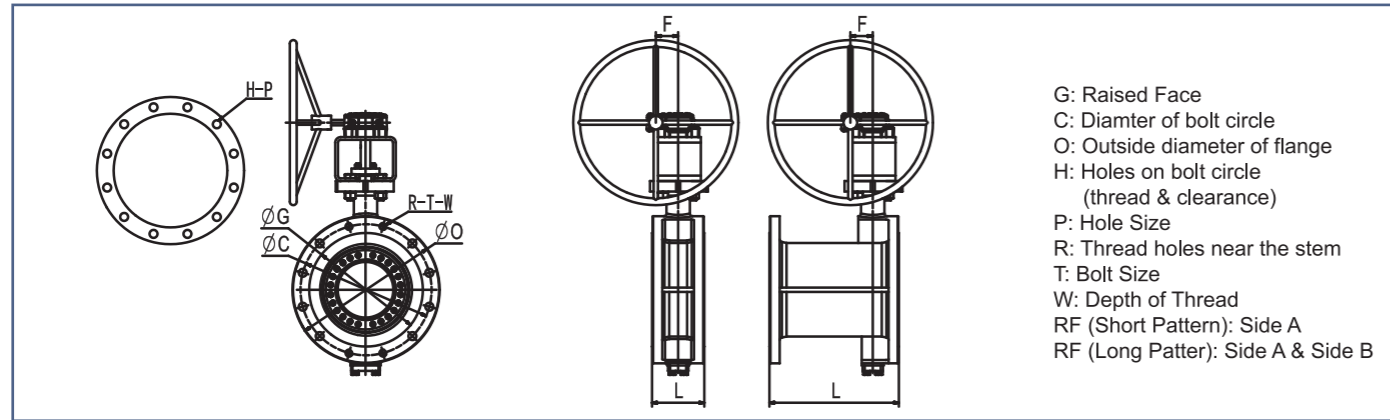
Class 600 (Lug and Wafer)

Size		G		C		F	M	D		N	E	L		S	K	
inch	mm	inch	mm	inch	mm			inch	mm			inch	mm		inch	mm
4"	100	6.18	157	8.50	216	4	7/8-9UNC-2B	0.59	15	4	7/8-9UNC-2B	full thread		4	0.59	15
6"	150	8.50	216	11.50	292	4	1-8UNC-2B	0.67	17	8	1-8UNC-2B	full thread		4	0.67	17
8"	200	10.63	270	13.74	349	4	1-1/8-8UN-2B	0.79	20	8	1-1/8-8UN-2B	full thread		4	0.79	20
10"	250	12.76	324	17.01	432	4	1-1/4-8UN-2B	0.87	22	12	1-1/4-8UN-2B	1.89	48	4	0.87	22
12"	300	15.00	381	19.25	489	4	1-1/4-8UN-2B	0.87	22	16	1-1/4-8UN-2B	1.89	48	4	0.87	22
14"	350	16.26	413	20.75	527	4	1-3/8-8UN-2B	0.94	24	16	1-3/8-8UN-2B	1.77	45	4	0.94	24
16"	400	18.50	470	23.74	603	4	1-1/2-8UN-2B	0.98	25	16	1-1/2-8UN-2B	2.24	57	4	0.98	25
18"	450	20.98	533	25.75	654	4	1-5/8-8UN-2B	1.06	27	16	1-5/8-8UN-2B	2.44	62	4	1.06	27
20"	500	22.99	584	28.50	724	4	1-5/8-8UN-2B	1.06	27	20	1-5/8-8UN-2B	2.44	62	4	1.06	27
24"	600	27.24	692	32.99	838	4	1-7/8-8UN-2B	1.26	32	20	1-7/8-8UN-2B	2.83	72	4	1.26	32

Class 300 (Lug and Wafer)

Size		G		C		F	M	D		N	E	L		S	K	
inch	mm	inch	mm	inch	mm			inch	mm			inch	mm		inch	mm
3"	80	5.00	127	6.63	168.5	4	3/4-10UNC-2B	0.51	13	4	3/4-10UNC-2B	full thread		4	0.51	13
4"	100	6.18	157	7.87	200	2	Φ22	through hole		8	3/4-10UNC-2B	full thread		NONE	NONE	NONE
6"	150	8.50	216	10.63	270	4	Φ22	through hole		12	3/4-10UNC-2B	full thread		NONE	NONE	NONE
8"	200	10.63	270	12.99	330	4	Φ25	through hole		12	7/8-9UNC-2B	full thread		NONE	NONE	NONE
10"	250	12.76	324	15.26	387.5	4	1-8UNC-2B	0.67	17	12	1-8UNC-2B	full thread		4	0.67	17
12"	300	15.00	381	17.76	451	4	1-1/8-8UN-2B	0.79	20	12	1-1/8-8UN-2B	full thread		4	0.79	20
14"	350	16.26	413	20.26	514.5	4	1-1/8-8UN-2B	0.79	20	16	1-1/8-8UN-2B	1.69	43	4	0.79	20
16"	400	18.50	470	22.50	571.5	4	1-1/4-8UN-2B	0.87	22	16	1-1/4-8UN-2B	1.89	48	4	0.87	22
18"	450	21.02	534	24.76	629	4	1-1/4-8UN-2B	0.87	22	20	1-1/4-8UN-2B	1.89	48	4	0.87	22
20"	500	22.99	584	27.01	686	4	1-1/4-8UN-2B	0.87	22	20	1-1/4-8UN-2B	1.89	48	4	0.87	22
24"	600	27.24	692	32.01	813	4	1-1/2-8UN-2B	0.98	25	20	1-1/2-8UN-2B	2.24	57	4	0.98	25

End Connection Dimensions



G: Raised Face
 C: Diameter of bolt circle
 O: Outside diameter of flange
 H: Holes on bolt circle (thread & clearance)
 P: Hole Size
 R: Thread holes near the stem
 T: Bolt Size
 W: Depth of Thread
 RF (Short Pattern): Side A
 RF (Long Patter): Side A & Side B

RF

Class 150 (RF)

Size		G		C		O		R	T	W		H	P
inch	mm	inch	mm	inch	mm	inch	mm			inch	mm		
3"	80	5.00	127	6.00	152.5	7.48	190					4	Φ19
4"	100	6.18	157	7.50	190.5	9.02	229	4	3/4-10UNC-2B	0.79	20	4	Φ19
6"	150	8.50	216	9.51	241.5	10.98	279	4	3/4-10UNC-2B	0.94	24	4	Φ22
8"	200	10.63	270	11.75	298.5	13.58	345	4	7/8-9UNC-2B	0.94	24	4	Φ22
10"	250	12.76	324	14.25	362	15.98	406	4	1-8UNC-2B	1.10	28	8	Φ25
12"	300	15.00	381	17.01	432	19.02	483	4	1-1/8-8UN-2B	1.26	32	8	Φ25
14"	350	16.26	413	18.74	476	21.06	535	4	1-1/8-8UN-2B	1.26	32	8	Φ29
16"	400	18.50	470	21.24	539.5	23.50	597	4	1-1/4-8UN-2B	1.57	40	12	Φ29
18"	450	20.98	533	22.76	578	25.00	635	4	1-1/4-8UN-2B	1.42	36	12	Φ32
20"	500	22.99	584	25.00	635	27.48	698	4	1-1/4-8UN-2B	1.42	36	16	Φ32
24"	600	27.24	692	29.51	749.5	32.01	813	4	1-1/2-8UN-2B	1.57	40	16	Φ35

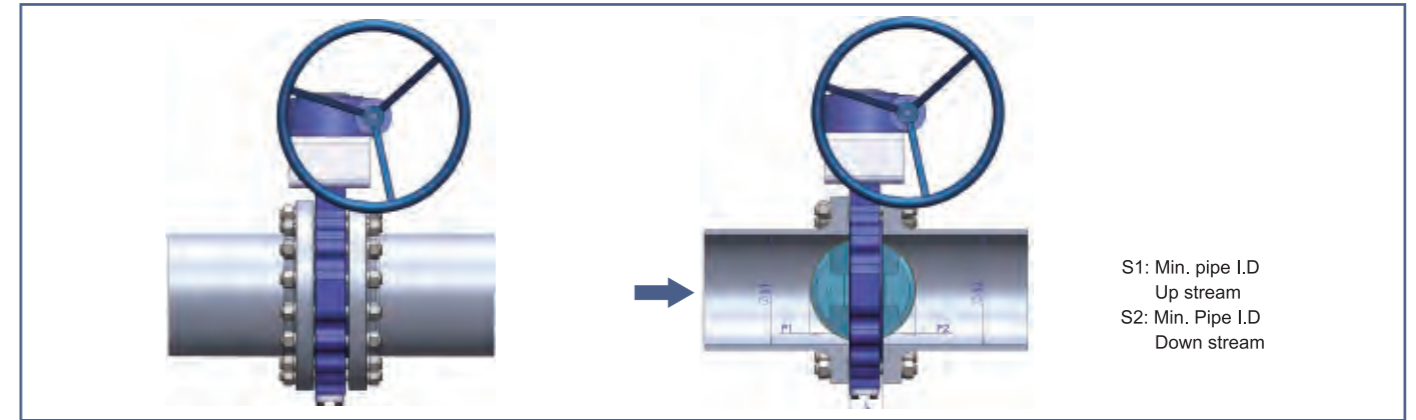
Class 300 (RF)

Size		G		C		O		R	T	W		H	P
inch	mm	inch	mm	inch	mm	inch	mm			inch	mm		
3"	80	5.00	127	6.63	168.5	8.27	210	4	3/4 10UNC-2B	0.94	24	4	Φ22
4"	100	6.18	157	7.87	200	10.00	254	4	3/4-10UNC-2B	0.94	24	4	Φ22
6"	150	8.50	216	10.63	270	12.60	320	4	3/4-10UNC-2B	0.94	24	8	Φ22
8"	200	10.63	270	12.99	330	14.96	380	4	7/8-9UNC-2B	1.06	27	8	Φ25
10"	250	12.76	324	15.26	387.5	17.52	445	4	1-8UNC-2B	1.18	30	12	Φ29
12"	300	15.00	381	17.76	451	20.51	521	4	1-1/8-8UN-2B	1.42	36	12	Φ32
14"	350	16.26	413	20.26	514.5	23.03	585	4	1-1/8-8UN-2B	1.34	34	16	Φ32
16"	400	18.50	470	22.50	571.5	25.51	648	4	1-1/4-8UN-2B	1.57	40	16	Φ35
18"	450	21.02	534	24.76	629	27.99	711	4	1-1/4-8UN-2B	1.57	40	20	Φ35
20"	500	22.99	584	27.01	686	30.51	775	6	1-1/4-8UN-2B	1.57	40	18	Φ35
24"	600	27.24	692	32.01	813	36.02	915	6	1-1/2-8UN-2B	1.89	48	18	Φ41

Class 600 (RF)

Size		G		C		O		R	T	W		H	P
inch	mm	inch	mm	inch	mm	inch	mm			inch	mm		
4"	100	6.18	157	8.50	216	10.75	273	4	7/8-9UNC-2B	1.10	28	4	Φ25
6"	150	8.50	216	11.50	292	14.02	356	4	1-8UNC-2B	1.26	32	8	Φ29
8"	200	10.63	270	13.74	349	16.50	419	4	1-1/8-8UN-2B	1.42	36	8	Φ32
10"	250	12.76	324	17.01	432	20.00	508	4	1-1/4-8UN-2B	1.57	40	12	Φ35
12"	300	15.00	381	19.25	489	22.01	559	4	1-1/4-8UN-2B	1.57	40	16	Φ35
14"	350	16.26	413	20.75	527	23.82	605	4	1-3/8-8UN-2B	1.89	48	16	Φ38
16"	400	18.50	470	23.74	603	26.97	685	4	1-1/2-8UN-2B	1.81	46	16	Φ41
18"	450	20.98	533	25.75	654	29.33	745	4	1-5/8-8UN-2B	2.05	52	16	Φ45
20"	500	22.99	584	28.50	724	32.01	813	6	1-5/8-8UN-2B	2.83	72	18	Φ45
24"	600	27.24	692	32.99	838	37.01	940	4	1-7/8-8UN-2B	2.28	58	20	Φ51

Min. Pipe I.D. for Disc Clearance



S1: Min. pipe I.D. Up stream
 S2: Min. Pipe I.D. Down stream

Class 150

Size		L		S1		S2		P1		P2	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
3"	80	1.89	48	2.68	68	1.46	37	0.83	21	0.16	4
4"	100	2.13	54	3.74	95	2.99	76	1.22	31	0.63	16
6"	150	2.24	57	5.55	141	5.12	130	2.01	51	1.46	37
8"	200	2.52	64	7.48	190	7.01	178	2.87	73	2.20	56
10"	250	2.80	71	9.37	238	8.94	227	3.70	94	3.03	77
12"	300	3.19	81	11.34	288	10.94	278	4.57	116	3.78	96
14"	350	3.62	92	12.36	314	11.89	302	4.88	124	4.09	104
16"	400	4.02	102	14.21	361	13.74	349	5.59	142	4.80	122
18"	450	4.49	114	16.22	412	15.63	397	6.50	165	5.47	139
20"	500	5.00	127	17.80	452	17.20	437	7.05	179	6.02	153
24"	600	6.06	154	21.69	551	21.14	537	8.50	216	7.48	190

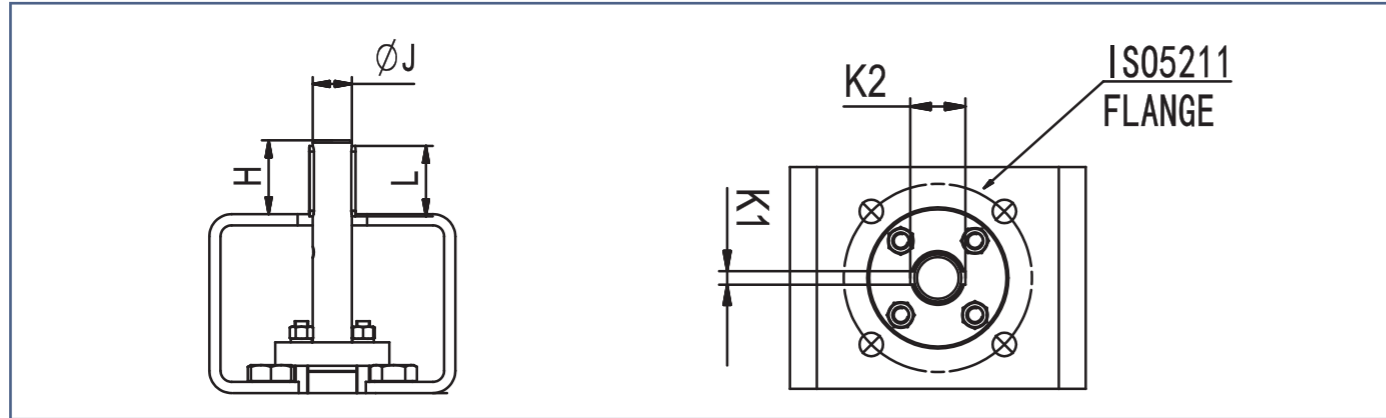
Class 300

Size		L		S1		S2		P1		P2	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
3"	80	1.89	48	2.68	68	1.46	37	0.83	21	0.16	4
4"	100	2.13	54	3.74	95	2.99	76	1.22	31	0.63	16
6"	150	2.32	59	5.55	141	5.04	128	2.01	51	1.42	36
8"	200	2.87	73	7.40	188	6.81	173	2.76	70	2.01	51
10"	250	3.27	83	9.29	236	8.82	224	3.50	89	2.76	70
12"	300	3.62	92	11.30	287	10.87	276	4.33	110	3.58	91
14"	350	4.61	117	12.13	308	11.69	297	4.33	110	3.62	92
16"	400	5.24	133	13.98	355	13.15	334	5.08	129	4.02	102
18"	450	5.87	149	15.55	395	14.65	372	5.63	143	4.49	114
20"	500	6.26	159	17.36	441	16.54	420	6.34	161	5.20	132
24"	600	7.13	181	21.14	537	20.51	521	7.72	196	6.81	173

Class 600

Size		L		S1		S2		P1		P2	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
4"	100	2.52	64	3.70	94	2.72	69	1.06	27	0.43	11
6"	150	3.07	78	5.63	143	4.88	124	1.73	43.84	1.10	28
8"	200	4.02	102	7.05	179	6.30	160	2.05	52	1.50	38
10"	250	4.61	117	8.90	226	8.19	208	2.76	70	2.09	53
12"	300	5.51	140	10.55	268	9.92	252	3.15	80	2.56	65
14"	350	6.10	155	11.50	292	10.51	267	3.50	89	2.60	66
16"	400	7.01	178	13.19	335	11.93	303	4.06	103	2.91	74
18"	450	7.87	200	14.33	364	13.54	344	4.17	106	3.46	88
20"	500	8.50	216	15.91	404	15.04	382	4.69	119	3.90	99
24"	600	9.13	232	19.84	504	18.82	478	6.34	161	5.28	134

Dimensions of Top Flange



Class 150

Size		H		J		K1		K2		L		ISO 5211
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
3"	80	1.26	32	0.63	16	0.20	5	0.79	20	1.26	32	F07
4"	100	1.57	40	0.71	18	0.24	6	0.91	23	1.57	40	F10
6"	150	2.05	52	0.87	22	0.24	6	1.06	27	1.97	50	F12
8"	200	2.05	52	1.02	26	0.31	8	1.26	32	1.97	50	F12
10"	250	2.28	58	1.10	28	0.31	8	1.34	34	2.20	56	F14
12"	300	2.60	66	1.26	32	0.39	10	1.50	38	2.48	63	F14
14"	350	2.60	66	1.38	35	0.39	10	1.61	41	2.48	63	F16
16"	400	3.35	85	1.57	40	0.47	12	1.81	46	3.15	80	F16
18"	450	3.35	85	1.77	45	0.55	14	2.05	52	3.15	80	F16
20"	500	4.13	105	1.97	50	0.55	14	2.24	57	3.94	100	F25
24"	600	4.13	105	2.17	55	0.63	16	2.48	63	3.94	100	F25

Class 300

Size		H		J		K1		K2		L		ISO 5211
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
3"	80	1.26	32	0.63	16	0.20	5	0.79	20	1.26	32	F10
4"	100	1.57	40	0.71	18	0.24	6	0.91	23	1.57	40	F10
6"	150	2.05	52	1.02	26	0.31	8	1.26	32	1.97	50	F12
8"	200	2.60	66	1.26	32	0.39	10	1.50	38	2.48	63	F14
10"	250	2.60	66	1.38	35	0.39	10	1.61	41	2.48	63	F16
12"	300	3.35	85	1.57	40	0.47	12	1.81	46	3.15	80	F16
14"	350	4.13	105	1.97	50	0.55	14	2.24	57	3.94	100	F25
16"	400	4.13	105	2.17	55	0.63	16	2.48	63	3.94	100	F25
18"	450	4.53	115	2.36	60	0.71	18	2.68	68	4.33	110	F30
20"	500	4.53	115	2.56	65	0.71	18	2.87	73	4.33	110	F30
24"	600	4.72	115	2.76	70	0.79	20	3.11	79	4.72	120	F35

Class 600

Size		H		J		K1		K2		L		ISO 5211
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
3"	80	2.05	52	0.87	22	0.24	6	1.06	27	1.97	50	F12
4"	100	2.28	58	1.02	26	0.31	8	1.26	32	2.20	56	F12
6"	150	3.35	85	1.38	35	0.39	10	1.61	41	3.15	80	F16
8"	200	4.13	105	1.77	45	0.55	14	2.05	52	3.94	100	F25
10"	250	4.13	105	1.97	50	0.55	14	2.24	57	3.94	100	F25
12"	300	4.53	115	2.36	60	0.71	18	2.68	68	4.33	110	F25
14"	350	4.53	115	2.56	65	0.71	18	2.87	73	4.33	110	F30
16"	400	4.53	115	2.76	70	0.79	20	3.11	79	4.33	110	F30
18"	450	6.30	160	3.35	85	0.87	22	3.74	95	6.30	160	F35
20"	500	6.30	160	3.74	95	0.98	25	4.13	105	6.30	160	F40
24"	600	6.30	160	4.13	105	1.10	28	4.61	117	6.30	160	F40

Flow Coefficient (C_v Value)

Class 150

Size		Disc Opening Angle								
in	mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
3"	80	6	16	24	35	51	75	112	144	160
4"	100	12	29	44	64	93	136	203	261	290
6"	150	32	79	119	174	253	371	553	711	790
8"	200	58	146	219	321	467	686	1022	1314	1460
10"	250	101	253	380	557	810	1189	1771	2277	2530
12"	300	159	398	597	876	1274	1871	2786	3582	3980
14"	350	222	556	834	1223	1779	2613	3892	5004	5560
16"	400	318	794	1191	1747	2541	3732	5558	7146	7940
18"	450	382	956	1434	2103	3059	4493	6692	8604	9560
20"	500	544	1360	2040	2992	4352	6392	9520	12240	13600
24"	600	752	1880	2820	4136	6016	8836	13160	16920	18800
28"	700	1072	2680	4020	5896	8576	12596	18760	24120	26800
30"	750	1228	3070	4605	6754	9824	14429	21490	27630	30700
32"	800	1400	3500	5250	7700	11200	16450	24500	31500	35000
36"	900	1720	4300	6450	9460	13760	20210	30100	38700	43000
40"	1000	2276	5690	8535	12518	18208	26743	39830	51210	56900
42"	1050	2468	6170	9255	13574	19744	28999	43190	55530	61700
48"	1200	3240	8100	12150	17820	25920	38070	56700	72900	81000

Class 300

Size		Disc Opening Angle								
in	mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
3"	80	6	16	24	35	51	75	112	144	160
4"	100	12	29	44	64	93	136	203	261	290
6"	150	32	79	119	174	253	371	553	711	790
8"	200	53	133	200	293	426	625	931	1197	1330
10"	250	84	211	317	464	675	992	1477	1899	2110
12"	300	146	365	548	803	1168	1716	2555	3285	3650
14"	350	185	462	693	1016	1478	2171	3234	4158	4620
16"	400	251	628	942	1382	2010	2952	4396	5652	6280
18"	450	344	859	1289	1890	2749	4037	6013	7731	8590
20"	500	418	1045	1568	2299	3344	4912	7315	9405	10450
24"	600	651	1628	2442	3582	5210	7652	11396	14652	16280
28"	700	936	2340	3510	5148	7488	10998	16380	21060	23400
30"	750	1160	2900	4350	6380	9280	13630	20300	26100	29000
32"	800	1304	3260	4890	7172	10432	15322	22820	29340	32600
36"	900	1660	4150	6225	9130	13280	19505	29050	37350	41500
40"	1000	1996	4990	7485	10978	15968	23453	34930	44910	49900

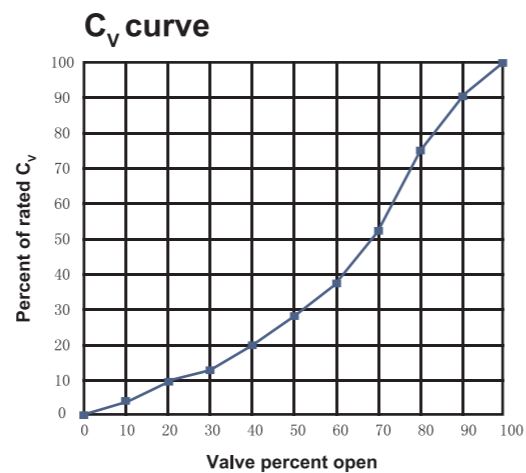
Class 600

Size		Disc Opening Angle								
in	mm	10°	20°	30°	40°	50°	60°	70°	80°	90°
3"	80	6	15	23	33	48	71	105	135	150
4"	100	10	25	38	55	80	118	175	225	250
6"	150	24	60	90	132	192	282	420	540	600
8"	200	43	108	162	238	346	508	756	972	1080
10"	250	68	170	255	374	544	799	1190	1530	1700
12"	300	101	252	378	554	806	1184	1764	2268	2520
14"	350	163	407	610	895	1302	1912	2848	3661	4068
16"	400	215	538	807	1184	1722	2529	3766	4842	5380
18"	450	299	747	1121	1643	2390	3511	5229	6723	7470
20"	500	393	982	1473	2160	3142	4615	6874	8838	9820
24"	600	598	1494	2241	3287	4781	7022	10458	13446	14940

Notes:

- Definition:
 C_v : The volume of water in gpm at 15°C that will pass through a valve with a pressure drop of 1 PSI.

 K_v : The volume of water in m³/hr at 15°C that will pass through a valve with a pressure drop of 1 bar.
- Flow direction: vertical to shaft
- $C_v = 1.155 K_v$



Product Warranty

Seller will replace without charge or refund the purchase price of products which prove to be defective in material or workmanship; provided that the product is properly installed and is used in the service for which the Seller recommends it and that the written claim, specifying the alleged defect, is presented to the Seller within 18 months from the date of shipment or 12 months after installation, whichever occurs first. Seller shall in no event bear any labor, equipment, engineering or other costs incurred in connection with any repairs or replacement. The warranty stated in this paragraph is in lieu of all other warranties, either expressed or implied. With respect to warranties, this paragraph states the Buyer's exclusive remedy and seller's exclusive liability.